Sandia National Laboratories

PROPOSAL FOR ADMINISTRATIVE NO FURTHER ACTION ENVIRONMENTAL RESTORATION SITE 88A, FIRING SITE: RANCH HOUSE OPERABLE UNIT 1334

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Environmental
Restoration
Project

United States Department of Energy
Albuquerque Operations Office

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Prepared for the
United States Department of Energy

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

1.1 ER Site Identification Number and Name

Sandia National Laboratories/New Mexico (SNL/NM) is proposing an administrative no further action (NFA) decision for Environmental Restoration (ER) Site 88A, Firing Site: Ranch House, Operable Unit (OU) 1334. ER site 88A was formerly included in OU 1272 in the Hazardous and Solid Waste Amendments (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (EPA 1992).

1.2 SNL/NM Administrative NFA Process

This proposal for a determination of an administrative NFA decision has been prepared using the criteria presented in Section 4.5.3. of the SNL/NM Program Implementation Plan (SNL/NM February 1994). Specifically, this proposal will "contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMU) at the facility that may pose a threat to human health or the environment" (as proposed in the Code of Federal Regulations (CFR) Section 40 Part 264.51[a] [2]) (EPA July 1990). The HSWA Module IV contains the same requirements for an NFA demonstration:

> Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993).

In requesting an administrative NFA decision for ER Site 88A, Firing Site: Ranch House, this proposal is using existing administrative/archival information to satisfy the permit requirements. This unit is eligible for an administrative NFA proposal based on one or more of the following criteria taken from the RCRA Facility Assessment Guidance (EPA October 1986):

Criterion A: The unit has never contained constituents of concern

Criterion B: The unit has design and/or operating characteristics that effectively prevent releases to the environment

Criterion C: The unit clearly has not released hazardous waste or constituents into the environment

Specifically, ER Site 88A is being proposed for an administrative NFA decision because the SWMU never contained hazardous waste or constituents (Criterion A).

1.3 Local Setting

SNL/NM occupies 2,829 acres (ac) of land owned by the Department of Energy (DOE) with an additional 14,920 ac of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service, the State of New Mexico, and the Isleta Indian Reservation. Sandia Corporation (a subsidiary of AT&T) operated SNL/NM for DOE from the time of its opening in 1945 until September 1993, when Martin Marietta Corporation undertook operation. SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945.

ER Site 88A (Figure 1-1) is owned by KAFB (unassigned) and located northwest of Arroyo del Coyote, just west of Coyote Springs and northwest of Coyote Springs Road. The site lies on 1.14 ac of land at a mean elevation of 5,815 feet (ft) above sea level (SNL/NM April 1994).

This inactive site is located on alluvial deposits correlated to the Tesajo-Millett stony sandy loams (IT May 1994), with permeabilities ranging from 0.6 to 20.0 inches (in.) per hour (USDA 1977). Geologic and hydrologic conditions at ER Site 88A are based on limited information obtained from the Greystone Manor well, which is located on the site. There is no lithologic log available for the Greystone Manor well, because the well was originally completed in the early 1900s to a depth of approximately 54 ft (88-17). The well was rehabilitated by SNL/NM in 1990, and the water in the lower 2 to 3 ft of the well is interpreted to be originating from unconfined alluvial sediments (88-17). The depth of the alluvial sediments at this site is unknown, but the alluvial deposits are believed to be underlain by Paleozoic or Precambrian rocks based on exposures in the surrounding mountains. Depth to groundwater at ER Site 88A is estimated to be 50 ft (DOE July 1994).

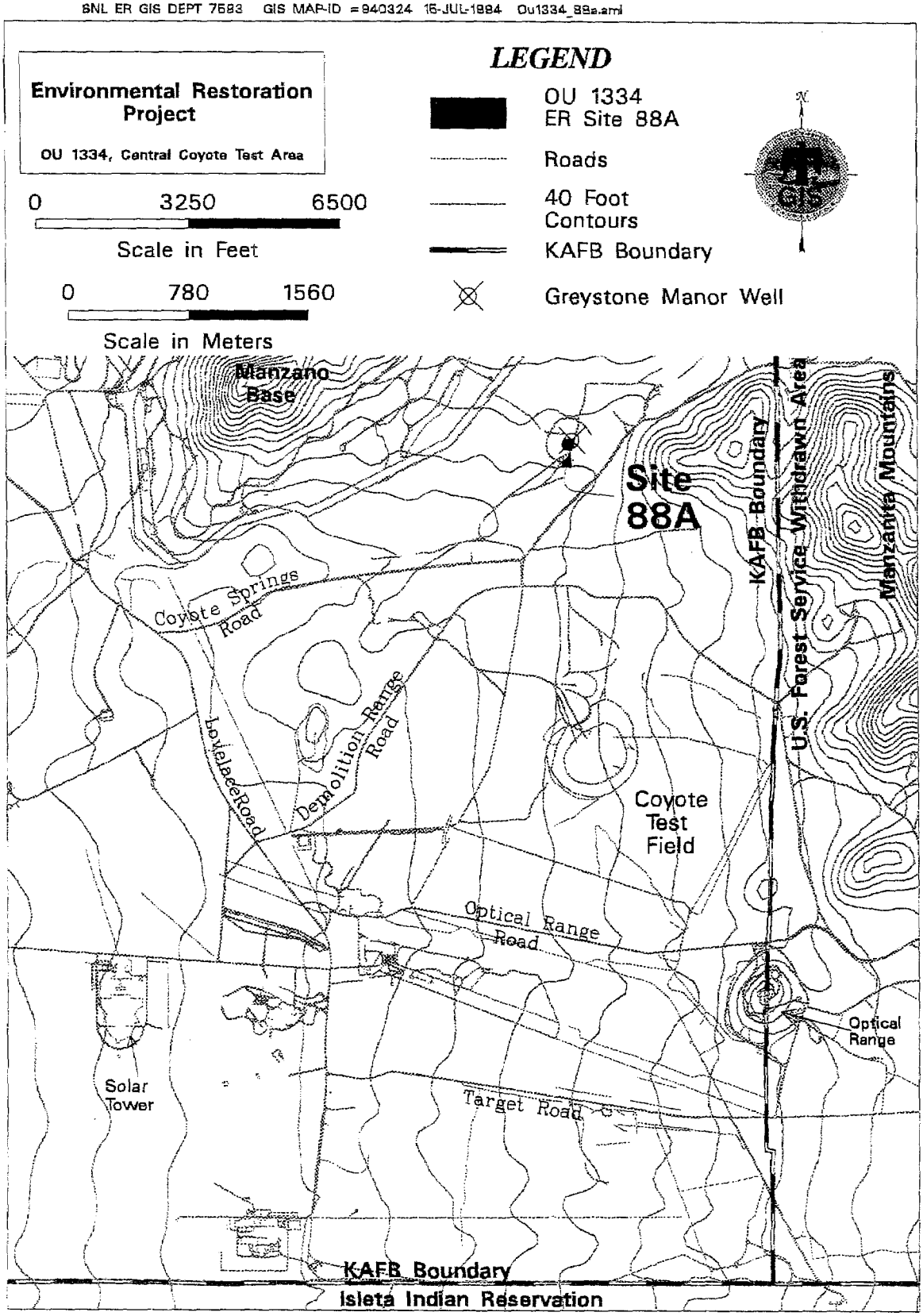

Figure 1-1
Location of ER Site 88A, Firing Site: Ranch House

2.0 HISTORY OF THE SWMU

2.1 Previous Audits, Inspections, and Findings

ER Site 88 (now divided into ER Sites 88A and 88B) was first listed as a potential release site based on the Comprehensive Environmental Assessment and Response Program (CEARP) interviews in 1985 (DOE September 1987), which identified a wooden instrumentation pole and its associated guy wires and wire mesh screen. The regulatory disposition of the SWMU remained uncertain, however, because no conclusion could be reached on whether hazardous waste or constituents were handled at the site. Insufficient information also prevented calculating a Hazard Ranking System score for the SWMU.

Subsequent to the CEARP inspection, the Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA). The RFA report (EPA April 1987) noted the presence of the same items reported in the CEARP and identified the SWMU in Section VII, "Other Areas of Concern," which addresses areas that do not meet the regulatory definition of a SWMU.

The features identified in the CEARP and RFA investigations are now known as ER Site 88B. ER Site 88A is defined as the rubble associated with the former Ranch House that lies to the east of the features identified in the CEARP and RFA reports.

2.2 Historical Operations

ER Site 88A (Figure 2-1) consists of the foundation and rubble from a former Ranch House building (Figure 2-2) and the Greystone Manor well, which is routinely monitored by the SNL/NM Sitewide Hydrogeologic Characterization Project at the site (88-17).

The concrete foundation of the former Ranch House is surrounded by cobble-sized rocks from which the structure was constructed. Pieces of wood believed to have been part of the building are found among the rocks. A 2-ft-deep wood-lined pit is located within the foundation and rubble area. According to interviews with former SNL/NM employees, this pitched-roof Ranch House consisted of two rooms with walls of field stone and mortar (62-29). In a 1963 SNL/NM drawing, this structure was referred to as the "Hacienda" and had the building number 9855 (88-22).

The Greystone Manor well is located approximately 10 ft south of the former Ranch House and consists of a 7-in.-diameter steel standpipe that rises out of a 4-ft by 6-ft concrete slab. The height of the pipe is approximately 2 ft (88-17), and it is covered with a locked cap. This monitoring well is designated as the Greystone Manor well because the ranch house was previously thought to have been the remains of Greystone Manor. It is now known that Greystone Manor was located near Coyote Springs. Adjacent to this well, a 10-in.-diameter

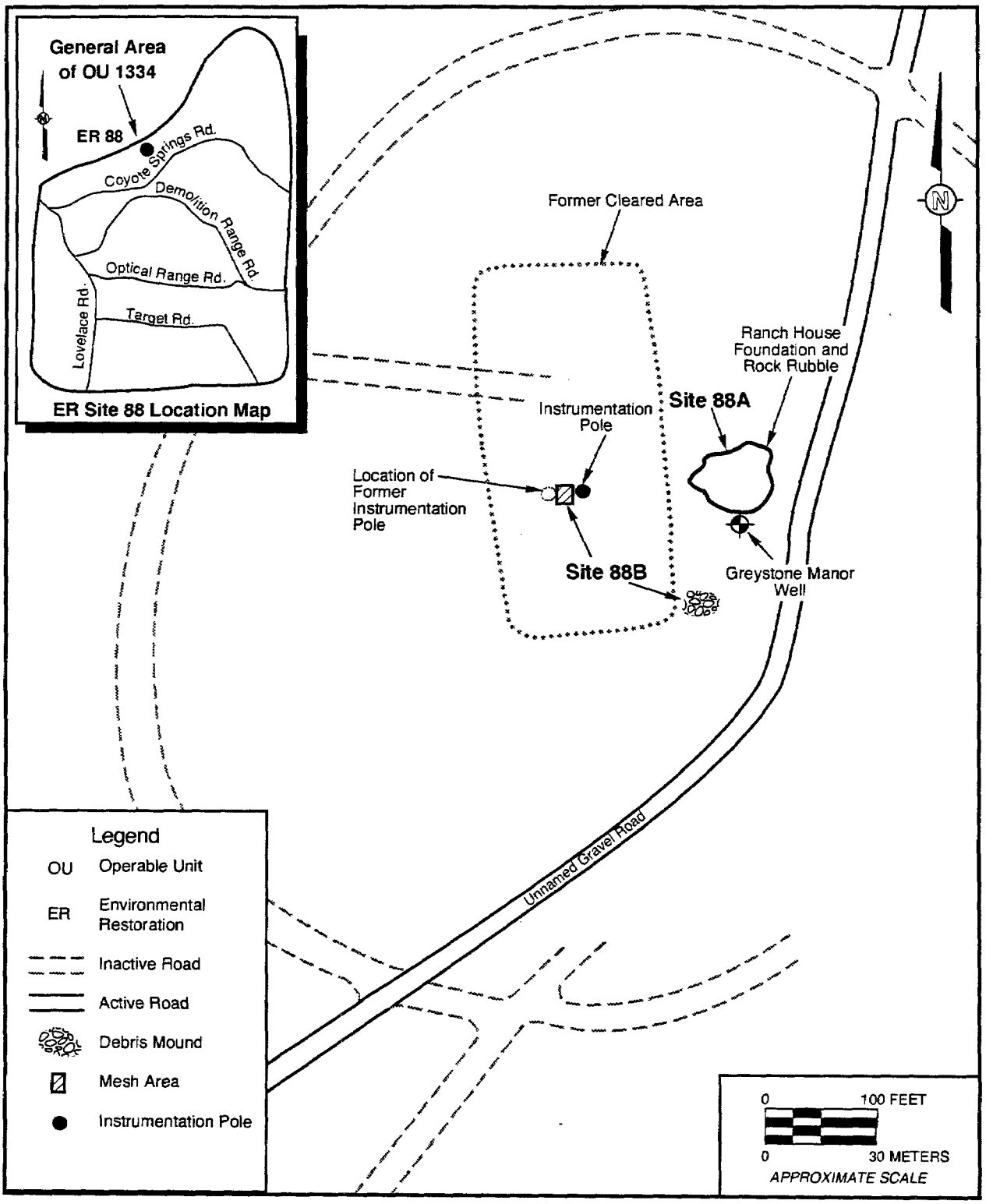

Figure 2-2
Site Map of ER Site 88, Firing Site: Ranch House (88A) and Instrumentation Poles (88B)

Remains of Ranch House, ER Site 88A. View to the northwest.

Figure 2-2
ER Site 88A Photograph

rusted metal standpipe rises out of the ground surface. A large piece of weathered wood rests on the top of and covers the pipe. This pipe protects a valve box that was probably used for the former Ranch House water system (88-17).

The Ranch House was one of the early homesteads that existed in the Coyote Test Field before the land was appropriated for Department of Defense and DOE use. A report on the rehabilitation of the Greystone Manor well indicates that the Ranch House was constructed in the early 1900s (88-17). The Ranch House was supposedly used for storage of field equipment. In a test that occurred between 1969 and 1971, the building was blown up with a mixture of methyl acetylene-propane-propadiene (MAPP) gas and air (USGS 1971). The purpose of the test was to experiment with demolition techniques for urban renewal activities (62-29). MAPP gas explosions are similar to those of fuel-air bombs used today, which consist of a tank of liquid fuel with a burster charge in the middle. The burster charge splits the tank open, and the gas escapes and disperses forming a cloud that is ignited. The ignition of the gas cloud generates a very large shock wave (62-21).

During the demolition testing activities, the MAPP gas was injected into the Ranch House through a long tube and was detonated using an explosive cord. Typically in these tests, two initiators and a looped detonation cord were used in order to ensure that all the fuel was consumed by the explosion. The results of the test on the Ranch House proved that the technique was too energetic for the intended purpose. The roof was blown vertically about 500 ft into the air, the walls were blown out, and the wooden floor remained in place but was heavily damaged. Since no fire occurred after the explosion, no water was sprayed on the site (62-29). There are no potential hazardous wastes or constituents associated with this test because the test was designed to consume all of the fuel.

2.3 Discussion of Information Conflicts

The Ranch House at ER Site 88A was initially misidentified as Greystone Manor, which is now known as ER Site 62 (62-47) and is located adjacent to Coyote Springs. The CEARP and RFA reports noted the presence of a wooden instrumentation pole and associated guy wire and wire mesh screen at ER Site 88. ER Site 88 has since been split into ER Sites 88A and 88B, and the features identified in the CEARP and RFA investigations are now associated with ER Site 88B.

3.0 EVALUATION OF RELEVANT EVIDENCE

3.1 Unit Characteristics

The Ranch House was completely destroyed sometime between 1969 and 1971 during an open air test involving the MAPP gas. The test was designed such that all of the gas was consumed in the explosion, leaving no potential hazardous waste or constituents to be released to the environment.

3.2 Operating Practices

The Ranch House was destroyed during an experiment that investigated the application of fuel-air explosions in the demolition of buildings. MAPP gas was injected into the Ranch House through a long tube and was detonated using an explosive cord. No water was sprayed on the site since no fire occurred after the explosion.

3.3 Presence or Absence of Visual Evidence

Aside from rubble and debris associated with the former Ranch House, there is no visual evidence at ER Site 88A indicating that the site contained hazardous waste or constituents.

3.4 Results of Previous Sampling/Surveys

3.4.1 Unexploded Ordnance/High Explosive Survey

In November 1993, KAFB Explosive Ordnance Disposal conducted a surface unexploded ordnance (UXO)/high explosives (HE) survey at the site in conjunction with ER Sites 21 and 62. No UXO or HE was found, but ordnance debris collected included ten smoke grenades, two 40mm white star cartridges, one booby trap simulator and numerous expended rifle shells and casings (21-34).

3.4.2 Gamma Radiation Survey

In January 1994, RUST Geotech Inc. conducted a surface gamma radiation survey at combined ER Site 88 (i.e., ER Sites 88A and 88B) (RUST Geotech, Inc., July 1994). This survey used a scintillometer containing a sodium-iodide detector to measure gamma radiation. The survey indicated one anomaly at the site: two pieces of orange Fiesta Ware (a type of dishware that has a high uranium content in the glaze) gave readings of 14 to 19

microroentgen per hour (μR/hr), which is 1 to 6 μR/hr above background (88-27). The Fiesta Ware is within the boundary of ER Site 88B but outside the boundary of ER Site 88A.

3.5 Assessment of Gaps in Information

There are no records that state hazardous waste or constituents were contained at the ER Site 88A. However, the potential data gap arising from the lack of environmental data is addressed by technical reports containing process knowledge on the one-time MAPP gas explosion. This information indicates that all gaseous fuel was consumed in the explosion. Additionally, recent ER project interviews suggest that residual contamination is unlikely to have been released to the environment.

3.6 Rationale for Pursuing An Administrative NFA Decision

SNL/NM is proposing an administrative NFA decision for ER Site 88A because the SWMU never contained hazardous waste or constituents (Criterion A). The site was used for a single experiment sometime between 1969 and 1971 (USGS 1971) to evaluate the application of MAPP gas explosions to the demolition of buildings (62-29). Residual products from the explosion would have been primarily carbon dioxide and water vapor, with minor amounts of other gaseous products. These products would have been rapidly dispersed in the atmosphere at the time of the test. Building rubble remaining from the explosion is not expected to contain any hazardous waste or constituents.

Fourteen years after the site was abandoned, an inspection conducted under the CEARP investigation noted the wooden instrumentation pole and associated hardware at ER Site 88B, but no mention was made of activities at the Ranch House. Subsequent to the CEARP inspection, the EPA conducted an RFA. The RFA report (EPA April 1987) noted the same materials identified in the CEARP report that are found at ER Site 88B, and no mention of the Ranch House is given.

In November 1993, a UXO/HE survey conducted by KAFB in conjunction with ER Sites 62 and 88 found no live UXO/HE or significant UXO/HE debris at the site (21-34). In January 1994, a surface gamma radiation survey of the site was done, and no detections were found at ER Site 88A above the background levels (88-27). Therefore, based on recent surveys and newly obtained historical information, ER Site 88A is recommended for an administrative NFA decision because the SWMU never contained hazardous waste or constituents (Criterion A).

4.0 CONCLUSION

Based upon the evidence cited above, no potential remains for a release of hazardous waste (including hazardous constituents) that may pose a threat to human health or the environment.

5.0 REFERENCES

5.1 ER Site References

Section 5.1 contains a comprehensive bibliographical list of the documents relating to ER Site 88A. This list is arranged numerically by the numbers assigned to each document.

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88-3.	Department of Energy, Albuquerque Operations Office, 1989. Environmental Restoration and Waste Management Five-Year Plan (Predecisional Draft), Activity Data Sheet, OU 1272, ER-SA-7, SA-0629, Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico.
88-4.	Sandia National Laboratories/New Mexico, October 1989, Environmental Operations Records Center Record Number ER/1334 088/INT/94-001.
88-5.	Sandia National Laboratories/New Mexico, October 1989, Environmental Operations Records Center Record Number ER/1334 088/INT/94-002.
88-6.	Sandia National Laboratories/New Mexico, October 1989, Environmental Operations Records Center Record Number ER/1334 088/INT/94-003.
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88-9.	Sandia National Laboratories/New Mexico, November 1989, Environmental Operations Records Center Record Number ER/1334 088/INT/94-006.
88-10.	Sandia National Laboratories, [n.d.]. Site 88 Map, Sandia National Laboratories, Albuquerque, New Mexico.

88-11. Lojek, C., and M. Young, Field Activity Daily Log, Schoolhouse Mesa RFI, Tour of North and South Coyote Test Field, Sandia National Laboratories, Albuquerque, New Mexico. January 27, 1993.

88-12. Lojek, C., and M. Young, Field Activity Daily Log, Sites 62 and 88 Graystone Manor, and Firing Site (Coyote Springs), Sandia National Laboratories, Albuquerque, New Mexico. July 21, 1993.

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88-16. Sandia National Laboratories/New Mexico, March 1994, Environmental Operations Records Center Record Number ER/1334 088/INT/94-009.

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88-18. Sandia National Laboratories, July 1991. Graystone Manor Field Log, Sandia National Laboratories, Albuquerque, New Mexico.

88-19. Sandia National Laboratories, April 1985. CEARP Site 88 Photographs, SA-0331-16, Albuquerque, New Mexico.

88-20. CEARP Photographs, 1985. TSO File SA-0331-16, Sandia National Laboratories, Albuquerque, New Mexico.

88-21. Site Photographs, July 1993. Sandia National Laboratories, Albuquerque, New Mexico.

88-22. Copland, J. Memorandum to D. Sandhaus, Sandia National Laboratories, Albuquerque, New Mexico. October 18, 1993.

88-23. Reference removed/not applicable to site.

88-24. ER Program Site Tour Notes, Sandia National Laboratories, Albuquerque, New Mexico. 1992

88-25. Lojek, C. Memorandum to D. Bleakly, Sandia National Laboratories, Albuquerque, New Mexico. February 24, 1994.

88-26. Sandia National Laboratories/New Mexico, October 1993, Environmental Operations Records Center Record Number ER/1334 088/INT/94-010.

62-21. Sandia National Laboratories/New Mexico, September 1993, Environmental Operations Records Center Record Number ER/1334 062/INT/94-005.

62-29. Sandia National Laboratories/New Mexico, October 1993, Environmental Operations Records Center Record Number ER/1334 062/INT/94-009.

62-47. Lojek, C. Memorandum to D. Bleakly, Sandia National Laboratories, Albuquerque, New Mexico. February 24, 1994.

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5.2 Reference Documents

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5.3 Aerial Photographs

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